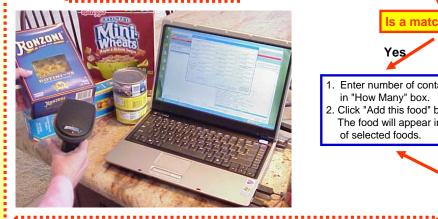# UNIVERSAL PRODUCT CODES AS A MEANS FOR ASSESSING FOOD AND NUTRIENT AVAILABILITY IN HOUSEHOLDS
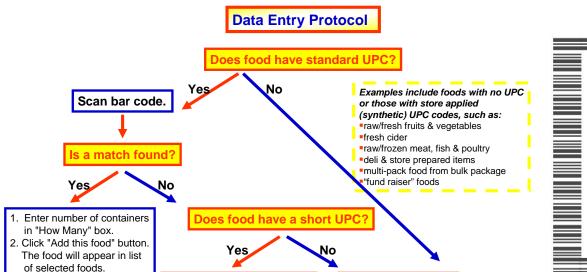
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ABSTRACT: The objective was to develop a database for conducting home food supply inventories and assessing nutrient availability. Universal Product Codes (UPCs) and handheld barcode scanners were identified as an efficient data collection method; however, few databases link UPCs with nutrient data and none permitted the calculation of nutrient content using commercial software. An exhaustive search located two large databases (>10,000 foods) linking UPCs and nutrient data (Gladson Interactive, Lisle, IL; FoodFacts.com, Edison, NJ). These databases were insufficient because many foods lack standard UPCs (e.g., those with retailer assigned UPCs like raw meats) or have no UPC (e.g., raw produce, homemade foods, premium foods). Thus, USDA Standard Reference data were married with UPC databases and formatted to permit data to be accessed and recorded on a household basis using commercial software (FoodWorks, Long Valley, NJ) modified for this study. Modifications allowed researchers to create home food inventories by scanning UPCs, performing "keyword" searches to locate foods lacking standard UPCs, and expanding the database to include additional UPCs and foods by manually adding Nutrition Facts data or importing data from other sources. Pilot testing (n=100 households) revealed that of the 17,844 foods recorded, 15,834 (89%) had standard UPCs; the remainder were selected by keyword or added to the database. Households averaged 178.4±62.5SD foods (range = 72 to 389). The average inventory took ~2 hours. UPC databases are an efficient, viable method for gathering household food supply data; however, limited availability and high costs often put these databases out of reach to researchers.

Keywords: UPC, FOOD COMPOSITION, ASSESSMENT
Funding or In-kind Services: Canned Food Alliance; Wakefern Foods, Inc.; Gladson Interactive; FoodFacts.com; and The Nutrition Company.

Database Contents

Source	# Foods
USDA SR 18*	5836
UPC Data	93958
Foods Added	828
TOTAL	**100622**

*Condensed

Foods Type Scanned	With Duplicates (n=17844)	No Duplicates (n=9661)
Standard UPC	**15834**	**8998**
Existed in UPC Database	14386 (81%)	8025 (89%)
Added as container variation	314 (2%)	186 (2%)
Added as new UPC	1134 (6%)	787 (9%)
No UPC	**2010**	**663**
SR 18 Database	1907 (11%)	622 (7%)
Alternate Sources	103 (<1%)	41 (<1%)

Data Entry Protocol

Does food have standard UPC?

Yes → Scan bar code.

No → *Examples include foods with no UPC or those with store applied (synthetic) UPC codes, such as:*
- raw/fresh fruits & vegetables
- fresh cider
- raw/frozen meat, fish & poultry
- deli & store prepared items
- multi-pack food from bulk package
- "fund raiser" foods

Is a match found?

Yes →
1. Enter number of containers in "How Many" box.
2. Click "Add this food" button. The food will appear in list of selected foods.

No → **Does food have a short UPC?**

Yes → Add the last digit if missing in the search window; search for match. **Is a match found?**

No → **Search by name. Is a match found?**

From "Add the last digit...": Yes → (to enter containers) / No →

Search by name. Is a match found?

Yes →
1. If >1 food matches, select the preferred food by double-clicking it.
2. Place the cursor in the "UPC number" field and scan UPC.
3. Add new UPC to database by clicking "Save this food as a new food item".
4. Add the food to inventory by entering the number of containers in "How Many" box.
5. Click "Add this food" button. The food will appear in the list of selected foods on the right of the Food List display.

No → **Does food have UPC & Nutrition Facts label?**

Yes → Scan UPC and enter Nutrition Facts data. Click "Save this Food" button to add the new item to the database.

No → Enter available data in Excel spreadsheet. Food will be added manually to the database to prevent possible duplication of identifying food code numbers.